We claim:-

1. A process for regenerating a zeolite catalyst which comprises the following stages (I) and (II):

   (I) Heating a partially or completely deactivated catalyst to 250 - 600°C in an atmosphere which contains less than 2% by volume of oxygen and

   (II) treating the catalyst at from 250 to 800°C, preferably from 350 to 600°C, with a gas stream which contains from 0.1 to 4% by volume of an oxygen-donating substance or of oxygen or of a mixture of two or more thereof.

2. A process as claimed in claim 1, which additionally comprises the following stage (III):

   (III) Treating the catalyst at from 250 to 800°C, preferably from 350 to 600°C, with a gas stream which contains from more than 4 to 100% by volume of an oxygen-donating substance or of oxygen or of a mixture of two or more thereof.

3. A process as claimed in claim 1 or 2, wherein the heating according to stage (I) is carried out at a heating rate of from 0.1 to 20, preferably from 0.3 to 15, in particular from 0.5 to 10, °C/min.

4. A process as claimed in any of claims 1 to 3, wherein the partially or completely deactivated catalyst is washed, before the heating according to stage (I), with a solvent selected from the group consisting of water, an

alcohol, an aldehyde, a ketone, an ether, an acid, an ester, a nitrile, a hydrocarbon and a mixture of two or more thereof.

5. A process as claimed in any of claims 1 to 4, which additionally comprises the following stage (IV):

(IV) Cooling of the regenerated catalyst obtained in stage (III) in an inert gas stream which may contain up to 20% by volume of a vaporized liquid selected from the group consisting of water, an alcohol, an aldehyde, a ketone, an ether, an acid, an ester, a nitrile, a hydrocarbon and a mixture of two or more thereof.

6. A process as claimed in any of the preceding claims, wherein the partially or completely deactivated catalyst is kept at from 250 to 800°C after the heating according to stage (I) and before treatment according to stage (II).

7. A process as claimed in any of the preceding claims, wherein the oxygen-donating substance is selected from the group consisting of an oxide of nitrogen of the formula NxOy, where x and y are chosen to give a neutral oxide of nitrogen, N2O, an N2O-containing exit gas stream from an adipic acid plant, NO, NO2, ozone and a mixture of two or more thereof.

8. A process as claimed in any of claims 1 to 6, wherein the oxygen-donating substance is CO2 and the stages (II) and (III) are carried out at from 500 to 800°C.

9. A process as claimed in any of the preceding claims, wherein the zeolite catalyst is selected from the group consisting of a titanium-, zirconium-, vanadium-, chromium- or niobium-containing silicalite having the MFI, BEA, MOR, TON, MTW, FER, CHA, ERI, RHO, GIS, BOG, NON, EMT,

HEU, KFI, FAU, DDR, MTT, RUT, LTL, MAZ, GME, NES, OFF, SGT, EUO, MFS, MCM-22 or MEL structure, the MFI/MEL mixed structure and a mixture of two or more thereof.

10. The use of a zeolite catalyst regenerated as claimed in any of the preceding claims for the epoxidation of organic compounds having at least one C-C double bond, for the hydroxylation of aromatic organic compounds or for the conversion of alkanes into alcohols, ketones, aldehydes and acids.